

Carrier



**AIR CONDITIONING
REFRIGERATION
HEATING**

FOR NEW AND EXISTING HOMES

The Carrier Home Air Conditioner Type 59F, replacing or complementing the ordinary heating system, furnishes the utmost in comfort and is flexible to meet the conditions in new or existing homes. Compactly built, to occupy minimum floor space, of test-proven parts, the conditioner combines heating by oil or gas, humidifying, cooling, dehumidifying, filtering, distributing and controlling conditions of air within the home. Its flexibility of use is illustrated below.

This unit will provide either conditioned air to the entire house, or is usable in the winter in conjunction with direct radiation in certain spaces such as the kitchen, garage or bath rooms where such "split-system" is often desirable.

The Conditioning Unit Type 59H (page 4) may be used instead of, or to complement either one of the combinations of the Type 59F Conditioner or the existing heating system in the home. It often furnishes air conditioning for a selected portion of the house, remotely located from the Type 59F Furnace and Conditioner.

The Furnace unit is designed for high efficiency and is adaptable to either gas or oil. It is also easily converted to the use of the opposite fuel. There is a 300 per cent range of capacity in the two sizes sufficient to make the unit usable for the small or large house. The Air Conditioner fits compactly on the furnace unit—the whole taking only about ten square feet of floor space, with a width of two and a quarter feet (small enough to pass through an ordinary doorway), by three feet, ten inches long.

The Furnace unit design provides for the addition of a domestic water heater, either tank or tankless, for year-round operation, with control of burner independent of the room thermostats.

The filters are easily replaced from standing position and an especially large filter area is provided requiring less change. All parts are easily accessible. The factory assembly makes necessary only a minimum of field connections. This enables speed of installation.

Acoustic treatment of the unit and flexible duct connections insures exceptional quietness. The attractive appearance of the finish makes the whole unit a pleasing addition to an attractive home.

A room thermostat controlling a modulating damper, regulating the air quantity passing over heating coil, permits sustained fan operation. The use of the modulating by-pass minimizes air stratification in rooms and temperature variation between rooms. This is a notable advantage. On and off control is also available.

FLEXIBILITY OF INSTALLATION



Type 59F Furnace Unit serving room(s) by direct radiation. (Type 59H Unit may be added without direct radiation.)



Type 59H Air Conditioner served by central station or other steam supply, which also serves other direct radiation.



Type 59F Furnace serving direct radiation—air conditioning to be added later.

DATA AND CAPACITIES

Type 59-F Furnace — Air Conditioner

Assembled as two major parts, the furnace and the conditioning unit are easily handled and accessible. The casing is of 18 gauge steel, finished in green baked wrinkle enamel. The fan especially designed for quietness is of the forward curve blade type accurately balanced.

Quiet design motors, for conditioner are capacitor start, induction run, 110 V, single phase, 60 cycle; for burner $\frac{1}{8}$ HP, split phase, 110 V, single phase, 60 cycle or other currents are V-belt driven. The conditioner unit motor is mounted on plate isolated by resilient mounting, and cooled in the air stream.

Heating coils are fin type non-ferrous horizontally mounted, connected to common header both supply and return ends. The humidifier is the evaporating pan type of adjustable capacity. Filters are impact on viscous wax type, odorless, easily replaceable.

Boiler, specially designed for maximum efficiency, is fully insulated and has low water line (only 33"), is constructed from open hearth flange quality steel. The furnace is fitted with either a gas burner or for oil burning with tunnel firing. Can be converted to either fuel with little alteration. Boiler fitted with sight gauge safety valve, water level test cocks, drain, low water cut-off and pressure switch.

Heating of domestic hot water is obtainable by a water heater fitted into the boiler. Storage tank or tankless type water heaters are available. Temperature of the water is controlled by an aquastat which actuates burner independently of the room controls, both summer and winter.

During the heating season, under normal operation, the fan of the Type 59F Air Conditioner runs only when heat is required in the building. If no heat is needed, the thermostat stops the burner. When heat is required, the thermostat starts the burner. The fan starts (and runs) due to a secondary control, only when steam fills the heating coil.

The Type 59F Furnace-Air Conditioner has been approved for oil burning by the Underwriters' Laboratories and for gas by the A.G.A.

CAPACITIES AND OVERALL DIMENSIONS

AIR CONDITIONING UNIT								
Size	Fan-RPM	Air-CFM	BTU Per Hour	Ht.	Lgth.	Width	Wt.	
59F2	385-570	560-850	54,000-74,000	31 $\frac{1}{2}$ "	67 $\frac{1}{2}$ "	27"	300	
59F4	385-600	1000-1600	100,000-140,000	35 $\frac{7}{8}$ "	40"	27"	800	
FURNACE FOR OIL								
	Oil Rate G.P.H.	BTU Per Hour	Equiv. Dir. Rad. Sq. Ft.		Ht.	Lgth.	Width	Wt.
			Steam	Hot Water				
59F2	1.1-1.73	120,000-190,000	500-790	800-1260	41 $\frac{1}{4}$ "	46"	27"	1400
59F4	1.73-2.88	190,000-323,000	790-1350	1260-2160	41 $\frac{1}{4}$ "	67 $\frac{1}{2}$ "	27"	2200
FURNACE FOR GAS								
			Steam	Hot Water				
59F2		150,000	626	1000	41 $\frac{1}{4}$ "	46"	27"	1200
59F4		260,000	1065	1385	41 $\frac{1}{4}$ "	67 $\frac{1}{2}$ "	27"	1900
MOTOR SIZES								
Air Conditioner				Oil Burner				
59F2	$\frac{1}{8}$ HP—110V—1PH—60C			$\frac{1}{8}$ HP—110V—1PH—60C				
59F4	$\frac{1}{2}$ HP—110V—1PH—60C			$\frac{1}{8}$ HP—110V—1PH—60C				
COOLING CAPACITIES								
59F2				2 Ton Approx.				
59F4				8 $\frac{1}{2}$ Ton Approx.				
Drain Connections— $\frac{1}{2}$ ". Drains Provided								



Type 59F Furnace-Air Conditioning Unit. Compactly assembled, available with side or top conditioned air outlets.



Type 59F Furnace, used separately, either oil or gas burner.



Type 59F Air Conditioning Unit used separately, side air outlets only.



Carrier Refrigeration Machine—used with Type 59F or Type 53H air conditioner for summer cooling.

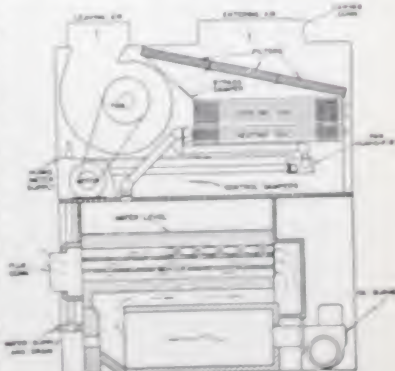
OPERATION CYCLE

Type 59F Home Air Conditioner, Oil Fired

"Entering air" is drawn thru ducts at return from rooms above or from outside. It passes thru filters, the heating coil, then thru the humidifier chamber, and thru the control dampers into the fan. It is then discharged thru ducts into the conditioned spaces.

The oil or gas furnace supplies steam to the heating coil of the conditioning unit. Temperature is controlled by the room thermostat, actuating burner. The gases of combustion pass thru the fan coils into the chimney system. With the oil fired burner, the gases pass thru the coils in a spiral motion for most effective use of the contained heat.

For superior temperature control, the by-pass and control dampers are actuated by the room thermostat, which by-passes a part of the room air around the heating coil.



TYPE 59H HOME AIR CONDITIONING UNIT

FOR SELECTED ROOMS

USES—The Type 59H Air Conditioning Unit is a small compact suspension mounted unit for air conditioning small residences or a limited number of rooms in a large residence.

DESCRIPTION—The flexibility of design permits the following functions: Humidifying, tempering or heating, filtering, circulating, cooling and dehumidifying. This unit is usable in existing homes, connected to the present steam heating system. Ducts distribute the conditioned air to the selected spaces, either on the first or upper floors. Care in mounting must be taken to insure that the condensate return from the heating coil to the boiler is pitched sufficiently to prevent pocketing.

The unit may be used to complement a Type 59F unit for additional spaces or more than one unit may be connected to the single boiler.

OPERATION—Return air from rooms enters at air intake, passes through filters and fan, then forced through heating coil and humidifier chamber to duct distributing it to conditioned spaces. A steam coil in the humidifier supplies vaporization effect. A manually adjusted drip cock supplies water to the humidifier. For cooling, a coil is slipped in place, connected to a refrigeration machine. (See Page 3, Page 14.)



CAPACITIES AND DATA — 59H UNIT

	Heating		Tempering		Cooling	
Fan Speed RPM	860	1160	860	1160	860	1160
Air CFM @ 70°	450	450	550	550	400	400
Air CFM @ 70°						
Final Temp.	530	530	610	610		
BTU Per Hour	43,300	43,300	32,400	32,400	8,000	8,000
External Static						
Press. In.	.06	.21	.06	.21	.06	.21
Motor HP	1/30	1/12	1/30	1/12	1/30	1/12

Length 40" Width 40 3/4" Height 13 5/8" Weight 350 lbs.

TYPE 50F PORTABLE SUMMER ROOM AIR CONDITIONER

The Type 50F Carrier Portable Summer Air Conditioner provides filtering, cooling, dehumidifying, ventilating and circulating for a single room. It is a compact, self-contained unit, effective for spaces up to about 2500 cu. ft., depending on conditions. A short integral duct connects the unit with the window opening for ventilation air and for exhausting compressor heat and condensed excess moisture.

The only service connection required is an electrical line for the 3/4 HP motor and the 1/30 HP circulating fan motor. A plug-in connection to the regular lighting circuit is usable if a running voltage of more than 95 volts is available.

The size of the unit is small—40 1/2" high, 36" wide, 18" deep. Standard finish is grained walnut with black inlay corners. A prime coated casing is available for use where special exterior finish is to be added for individual requirement.

A water cooled model is also available which requires water supply and drain connections of 1/2" pipe size. Net weight of the 50D unit is 465 lbs. It is fitted with casters for portability.



Type 50F—Summer Room Air Conditioner

TYPES 50L3 AND 50L5 COMPLETE-IN-ONE-CABINET AIR CONDITIONERS

3 TON CAPACITY 50L3

5 TON CAPACITY 50L5



32 1/2" x 20 1/2" x 7" — 3 Tons Cooling 42 1/2" x 20 1/2" x 7" — 5 Tons Cooling

USES—Summer or year-round air conditioning, the latter available with parts for heating and humidifying. For small and medium-sized stores and offices. Can be located for convenience within or next to conditioned area. Adjustable outlets and louvers provide selective air delivery . . . frontward, backward, either side, upward, downward, concentrated or spread . . . to entire interior.

DESCRIPTION—Both sizes are water-cooled. Require only three connections . . . electric, water, drain. All complete in a compact, beautiful cabinet. Quickly, easily installed or re-installed. Moved as easily as portable store fixtures. Small size, 50L3; 32 1/2" x 20 1/2" x 7"; 3 tons cooling. Large size, 50L5; 42 1/2" x 20 1/2" x 7"; 5 tons cooling. Handsome, walnut, satin gloss cabinet as beautiful as styled furniture . . . of cold rolled furniture steel with reinforced channel construction. Sound and heat insulated throughout. Tested and completely assembled at factory.

OPERATION—Return air from room enters intake grille, passes through fans, filters, and cooling (or heating) coils and is discharged to conditioned space. May be used with small runs of duct and outside air intake if desired. Controls at eye level on front panel for personal preference and economy; selected conditions are maintained automatically. Quiet, dependable operation with modern, V-type, dynamically balanced, rubber-mounted freon compressor. Operates on any current.

TYPE 48F2 ROOM WEATHERMAKER

USES—These units are used for small spaces of 1200 cu. ft. or more volume, such as offices, residential rooms, stores, restaurants or similar areas.

DESCRIPTION—One or more as necessary can be used. For cooling, one or more units are connected to a refrigeration machine located outside the conditioned space. It may also be supplied by a cold water or brine line from some other point.

The cabinet is compact in size, available in fine grained walnut or prime coat for special finish application. Ventilation is manually controlled, the unit being set either in front of a window or elsewhere in the room.

MADE IN 5 TYPES

(1) Type 48F2-114

Furnished with air circulating fan, cooling coils for direct expansion of Freon, controls. Provides cooling and dehumidification. Also available for methyl chloride.

(2) Type 48F2-174

For cooling, dehumidification, humidification (without heating). Fitted with Freon cooling coils, target water spray nozzles, air circulating fan and controls. Manual ventilation. Also available for Methyl Chloride.

(3) Type 48F2-134

Cooling, steam heating, dehumidification, humidification, air circulation. Freon direct expansion. Manual ventilation. Also available for Methyl Chloride.

(4) Type 48F2-154

Same unit as Type 48F2-134, except coils are furnished for hot water heating.

(5) Type 48F2-404

Same as 48F2-114 except with well or cold water cooling coil.

SPECIFICATIONS

Air Capacity Through Unit—450 c.f.m.

Power, Circulating Fans—One 1/30 hp., 870 r.p.m., A.C. or D.C. resilient mounted motor, standard equipment.

Heating Coil—Aerofin seamless copper tubing, helically wound fins.

Steam Connections—(Types 48F2-124 and 48F2-134 units), 1" supply, 1 1/4" return. Hot water connection (Type 48F2-144-154) 1 1/4" supply and return.

Cooling Effect—Range 9,000 to 18,000 B.t.u./hr./unit.

Diffuser Plates—Adjustable at top of unit, provides directional distribution.

Cooling Coil—Aerofin seamless copper tubing, helically wound fin.

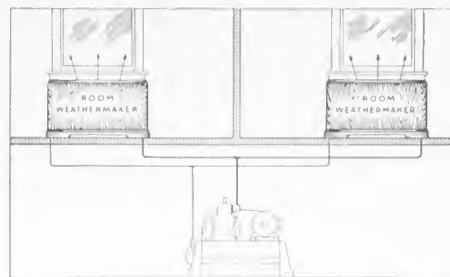
Refrigerant Connections—3/8" flare nut (inlet), 3/4" flare nut (outlet). Dehydrated and sealed.

Weight—Shipping weight 160 to 200 lbs. per unit. Floor strengthening unnecessary.

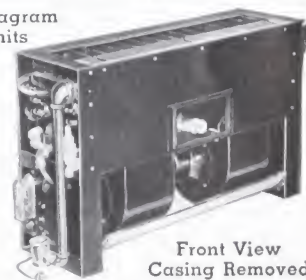
Dimensions—Width: 43 1/2". Depth: 12 1/2". Height: 24".



Type 48F Room Weathermaker



Installation Diagram
Two 48F Units



Front View
Casing Removed

TYPE 36B AND 36D WEATHERMASTER UNITS

USES—Same as Type 48F2.

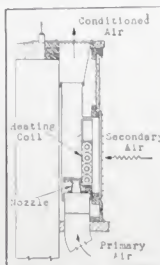
The Weathermaster system for year round air conditioning is made up of a central station (see pages 7, 8) air supply, with duct distributing the conditioned air to the Weathermaster Unit located in the conditioned space.

DESCRIPTION—**Type 36B.** The complete Weathermaster Unit includes a nozzle and stack, nozzle control for volume of primary air, and a heater coil, which replaces ordinary radiation, all assembled as a unit, which may be encased to suit architectural treatment. The Units may be encased in the wall under a window sill or may be used as an attractive cabinet placed elsewhere in the room.

The heater assembly is built up of Aerofin tubing. Steam supply line fitted for 3/4 inch pipe, return for 1/2 inch pipe. Unit ranges in size from 18 inches to 60 inches long with about 20 inches as the minimum height.

Type 36D is a unit complete with its own casing. Available in seven lengths. For use only with an external primary air supply (no fan in 36D).

OPERATION—The air enters a compartment at the bottom of the Unit whence it is sprayed upward by nozzles at high velocity. This energy creates a vacuum which draws room air through the inlet grille located in front of the Unit, both the primary air and secondary air being distributed to the room evenly diffused, eliminating hot and cold spots in the room. In winter the room air passes over heating coils located inside the inlet grille which warms the air combination sufficiently to provide desired conditions in the room. The primary air being tempered, this provision of sufficient heating at the room Unit insures absence of over-heating and places absolute temperature control in the Unit. Individual control of conditions in one room is thus provided without affecting adjacent rooms.



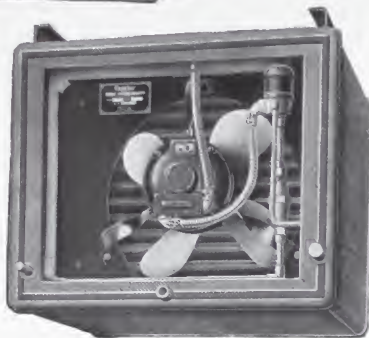
Cross Section
Type 36B



Type 36B Weathermaster Unit



Type 36B Unit, Being Installed



TYPE 39D3 WEATHERMAKER

(Suspension Mounted)

USES—An economical, and efficient unit for cooling, dehumidifying, and circulating air in small areas.

DESCRIPTION—It is small, requires no floor space, a minimum of connections, eliminates expensive space alteration. It is suitable for single or multiple installations, with one or several units connected to a refrigeration machine remotely located (see page 14). Grained walnut metal casing harmonizes architecturally with practically any room treatment.

The unit may be suspended within the conditioned space, as has been the case in a great many small stores, restaurants or lunch counters, or it may be set into the wall with the adjustable outlet set flush with the finished wall, if there is ample space for inlet air to the unit. In some cases, a duct between a unit set thus and a grille near the floor has been used to provide room circulation of air.

OPERATION—A propeller fan, powered by a 1/15 hp. motor, forces air efficiently through cooling refrigerant coil, the chilled metal surfaces cooling the air and condensing out excess moisture. The adjustable outlet grille permits air to be distributed in the desired direction up to 30 ft. in front of unit. The inlet (back) side must be at least 8" from the wall, to allow free air entrance.

This unit may be connected to outside air when positive ventilation of the space is desired, if the connecting duct is made short and of ample size. A lint screen is supplied to intercept fibrous particles.

A complete and accurate survey and computation of heat loads is absolutely necessary for this unit, as for larger installations.

SPECIFICATIONS

Mounting—Universal suspension bracket for $\frac{3}{8}$ " mounting rods.
Finish—Grain walnut or prime coat for repainting, metal casing.
Fan, Motor—1/15 Hp., 860 r.p.m., 110-volt, 60 cycle single phase (or other single phase current on order).
Refrigerant Connections—Freon or Methyl Chloride, $\frac{1}{2}$ " o.d. inlet; $\frac{3}{8}$ " o.d. outlet; copper tubing. Chilled water, $\frac{3}{8}$ " o.d. inlet and outlet.
Cooling Effect—Up to 48,000 B.t.u. per hour. Air Volume—725 c.f.m.

Dimensions—Width: 25 $\frac{1}{2}$ ". Depth: 22". Height: 20 $\frac{1}{2}$ ".

Weight—200 lbs.

Insulation—Refrigerant suction lines, or chilled water lines, should be insulated to prevent condensation.

Drip Pan for Condensate—Felt insulated, $\frac{3}{4}$ " pipe connection for drain.

Ventilation—Usually other than through unit. May be outside duct.

TYPE 39G7 WEATHERMAKER

Fan—Four bladed, aluminum, propeller type fan, mounted on shaft of $\frac{1}{8}$ h.p., 1200 r.p.m., 110-volt, single phase, 60 cycle motor.
Coil—Seamless copper tubing with aluminum fins. All connections for $\frac{3}{4}$ " standard pipes; drain $\frac{1}{2}$ ".

Dimensions—22 $\frac{1}{2}$ " high; 22 $\frac{1}{2}$ " wide; 23" deep.

Finish—Sea foam green lacquer.

Shipping weight—175 lbs.

TYPE 39J2 WEATHERMAKER

USES—Attractively finished, it is intended for location within conditioned areas. Its small vertical dimension requires no sacrifice in head room. Especially adapted to limited spaces over doors, show cases, cabinets, etc.

DESCRIPTION—This unit, similar in appearance to the 39D3, provides cooling, dehumidification and air circulation. Capacity ranges from 2 to 8 tons refrigeration effect.

The width of the unit permits adequate air distribution. Two centrifugal overhung fans, directly driven by one $\frac{1}{4}$ hp. motor, draw air over the cooling coils and discharge through two separate adjustable grilles. Air may be distributed in the direction desired from 20 to 50 feet in front of unit, depending on outlet adjustment.

The Type 39J2 unit is shipped completely assembled. Cooling coils are available for Methyl Chloride, Freon, or for chilled water. The only connections necessary are for electricity, refrigerant and a drain for condensation. The source of cooling is usually located outside of the conditioned space.

OPERATION—Intended for free air delivery, this unit can be used if necessary with short ample sized ducts. Ventilation is obtainable through an outside air connection to the unit.

It is necessary that adequate and accurate study be made to determine the best location of one or more 39J units to serve a given space. Some of the factors are: physical characteristics of the space; required air distribution; distribution of the heat load; possible support; architectural harmony; location of refrigeration machines; available outside air connections; cost of erection.

This unit, like the Type 39D unit, is frequently installed behind a wall of the conditioned space, with the adjustable grille flush with the inside finished wall.

The grille adjustment feature makes up to a 30° distribution above or below horizontal and to right or left of vertical. Adjustment to give a longer blow may result from converging air streams.

The cooling effect is controlled through the refrigerant expansion valve.

SPECIFICATIONS

Casing—Stamped metal, finished either in grained walnut or prime coat for repainting to match decoration. Insulated.

Fans—Two quiet multi-blade, forward curved, aluminum fans, mounted on shaft driven by $\frac{1}{4}$ -hp., 870 r.p.m., 110-220 V., 50, 60 c., 1 ph. motor.

Coils—Acrofin, helically wound, metallic-bonded fins for direct expansion methyl chloride or Freon refrigerant or for chilled water.

Condensate Drip Pan—Mounted under coils to remove moisture taken out of air. Coated with corrosion-resistant paint and insulated.

Refrigerant Connections—

Methyl chloride or Freon

Chilled water

Inlet

$\frac{5}{8}$ "

$\frac{1}{2}$ "

Outlet

$\frac{1}{2}$ "

1"

Drain Connections— $\frac{3}{4}$ " pipe with brass dirt screen.

Electrical Connections—Motor connections brought to junction box inside unit. Conduit carried to connector on top of box.

Dimensions—Width: 50". Height: 16 $\frac{1}{2}$ ". Depth: 29 $\frac{1}{2}$ ".

TYPE 39Q AND 39R WEATHERMAKERS

USES—These units are widely used for complete air conditioning of medium sized spaces such as stores, offices, hotels, factories and other similar types of space.

DESCRIPTION—The five sizes available range in cooling capacity from 2 to 40 tons for a single unit, making for wide flexibility in use.

The inlet air is filtered through easily replaceable, throw-away type, spun glass filters, or if desired, honey comb impact type.

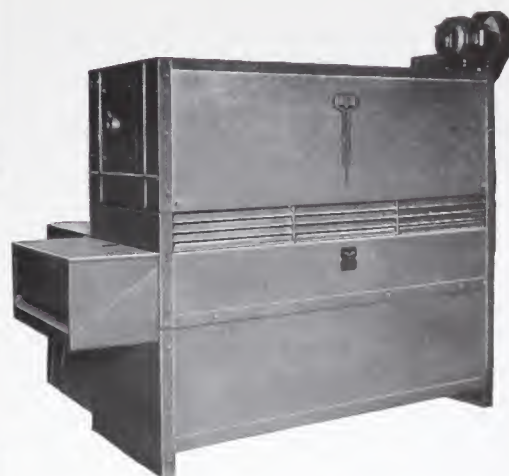
The basic units are sectionalized—the fan section, coil section and drip pan section for condensate, thus facilitating handling, erection and location.

For superior control of conditions in the room, the units are fitted with return air by-pass, to combine a portion of room air with newly conditioned air. The 39Q models are designed for floor mounting.

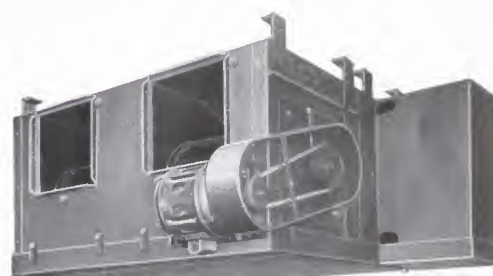
OPERATION—Ordinarily, the conditioning unit is set outside of the conditioned space and ducts lead the conditioned air to the design locations in the room or series of rooms. However, the attractive finished appearance of the unit makes it possible to house the entire unit in the conditioned space. Depending on the particular requirements, the conditioned air may be distributed directly from the unit or through ducts leading to the conditioned space.

For summer conditions, cooling may be accomplished by one or more refrigeration machines expanding refrigerant into the cooling coils of the Weather-maker or the coils may be directly connected to a cold water or brine circulation system. In the winter, steam is supplied to the heating coils, and humidifying heads used to supply necessary moisture.

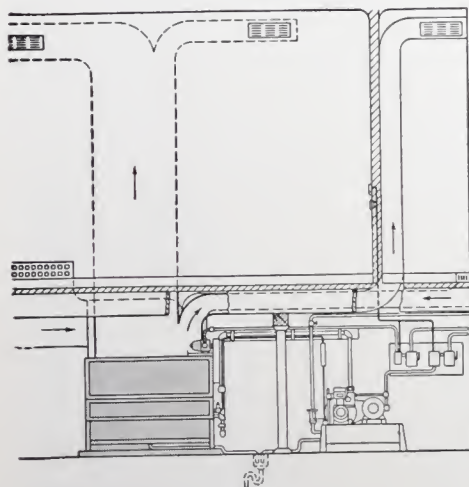
The 39R Weathermakers are designed for suspension mounting either inside or outside of the conditioned space in the same manner as the 39Q type. The advantage of this model is the saving in floor space possible, which may be essential in certain areas of small commercial establishments, offices, or factory installations.



Front View 39Q Showing Grilles for Recirculated Air Inlet



Outlet End of 39R Unit, Fans Visible Through Outlet Opening



Typical installation of a 39Q unit located on a floor below the conditioned space, distributing the conditioned air to it through ducts and scientifically designed outlets.

SPECIFICATIONS

Assembly—Unit divided into fan coil and drip pan sections to facilitate handling and installation. Fan section on 39Q units (except 39Q9, ordered as required) may be placed to discharge air horizontally or vertically. The 39R model has horizontal air discharge.

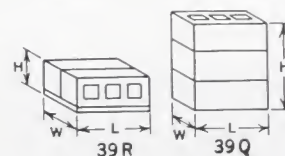
Fans—Double inlet, centrifugal, die-formed, electrically welded steel. Efficiency much greater than usual multi-blade types. Access provided for endwise removal.

Cooling Coils—Aerofin, seamless copper tubing, with helically-wound, metallic-bonded fins. Special header provides uniform refrigerant distribution throughout coils.

Heating Coils—Aerofin, silver brazed joints, designed to relieve expansion and contraction stresses.

Connections—Steam and refrigerant connections external at end of unit.

Humidifiers—Steam heated evaporators or atomizers as accessory installations in ducts.



DIMENSIONS AND PHYSICAL DATA

Unit No.	*Base Dimensions, inches			**Space required, inches			Ton-nage Range	Average Heating Capacity Btu/hr	Fans Max. C.f.m.	Motor hp. Range	Air Filters		
	L	W	H	L	W	H					No.	Size in.	Wt.
39Q1	27 1/4	21	63 1/2	41	59	75 1/2	1-5	50,000	1000	1/4-1/2	2	19x20	717
39R1	27 1/4	35 1/2	23 3/4	41	70	36 1/2					2	16x20	707
39Q2	46 1/2	21	63 1/2	60	59	75 1/2	2-10	100,000	2000	1/4-3/4	6	16x20	1053
39R2	46 1/2	35 1/2	23 3/4	60	70	36 1/2							1033
39Q6	59 1/2	28	63 1/2	78	69	79 1/2	5-20	200,000	4000	1/2-1 1/2	9	20x20	1558
39R6	59 1/2	42 1/2	30 3/4	78	84	46 1/2							1538
39Q7	85 1/4	28	63 1/2	104	69	79 1/2	7-30	300,000	6000	3/4-2	12	20x20	2120
39R7	85 1/4	42 1/2	30 3/4	104	84	46 1/2							2170
39Q9	85 1/4	36 1/2	70 1/2	104	82	86 1/2	10-40	400,000	8000	1-3	15	16x25	2440
39R9	85 1/4	42 1/2	39 1/4	104	88	55 1/2							2385

*Bare unit without motor, belt guard, filter box, and control box.

**Space required for proper installation including motor, belt guard, filter box, control box, and space on side opposite filters (39Q) or under unit (39R) to gain access to fans. Does not include space at end for removal of fan assembly or coils.



Equipment Room Showing a Large Central Plant System

LARGE CENTRAL PLANT

USES—This type of system is generally used in theatres, large department stores, printing press rooms, office buildings, factories, large restaurants, and other spaces requiring large capacity of air conditioning.

DESCRIPTION—The central plant system is ordinarily distinguished from the so-called unitary type by the fact that the air conditioning and refrigeration apparatus are located at some central point to serve the entire building or space. It is also distinguished by the fact that the air conditioning equipment is job-assembled of selected parts of a size to give the desired capacity, instead of using a series of factory-assembled units of sufficient size and location to accomplish the desired results. The central plant system is "custom-built" instead of "off-the-shelf."

Ordinarily, the central plant system has a larger capacity than is available with any such factory assembled unit.

Complete and accurate study is necessary to determine the economic type, size and location of the equipment. Sometimes there may be two or more central "stations", each to serve a part of the conditioned space, with air distribution ducts leading to it. The choice of equipment depends on many factors involved on each particular space to be conditioned.

OPERATION—In some cases, the spray type dehumidifier may be used, in other cases, the cooling and dehumidification of the air is accomplished by passing it through finned coils containing refrigerant, brine or cold water, or there may be a combination of the two types, as in the Type 29N Unit (see page 9).

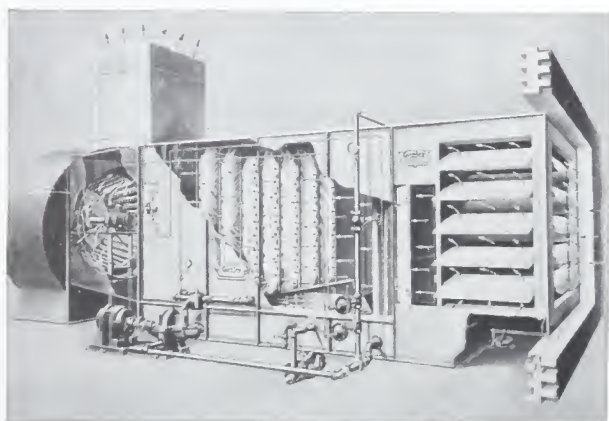
The conditioned air is distributed from the central station apparatus to the conditioned spaces through scientifically designed duct work and outlets (see page 10) or through a special type of distribution system such as the 36B Weathermaster Unit (page 5).

Refrigerated spray water for the air conditioning apparatus is usually obtained by mechanical refrigeration, although under favorable conditions, if very cold and in sufficient quantity, deep well or city water may be used, to remove excess heat and moisture from the air.

The cut-away section on the left indicates the operation of a central plant system. Outside air and possibly a portion of returned room air enters at the right end of the plant and may or may not pass through preheating coils, before it enters the spray (or cooling coils) chamber. Here the air is cleaned and cooled by contact with the cold water spray (or coils) and the excess moisture removed by condensation, or required moisture added. The air is then taken through reheating coils, to be brought up to proper conditions, mixed with the by-passed room air (see below), and be forced by the fan through ducts to the conditioned space.

ADVANTAGES OF THE BY-PASS IN AIR CONDITIONING

Use of the by-pass in air conditioning has been found of great benefit because it provides simultaneous and independent control of both temperature and humidity. According to this method a portion of the return air from the conditioned space enters the apparatus immediately before the fan where it diffuses with the newly conditioned air. While a very appreciable part of the benefit is the economy in refrigeration required for spray water, due to the smaller percentage of total air taken thru the spray, a much greater benefit is the sensitivity and range of control possible with such an arrangement. The relative humidity can be kept lower than is practical without using the by-pass and extremes in temperature are avoided, with a consequent economy in original cost of installation and yearly operation.



Cut Away Section of Central Plant Air Conditioning Equipment



A Dehumidifier and Fan Section of a Central Plant

TYPE 29R SURFACE TYPE DEHUMIDIFIER

USES—This unit has wide use both as a part of a built-up central plant system where several of the units may be used in combination. It also may be used individually, installed directly in duct work to cool and dehumidify.

OPERATION—Cooling and dehumidifying occurs when the air is passed through Aerofin, non-ferrous metal coils containing refrigerant, brine, or cold water. The air gives up excess heat to the chilled coils with their helically wound, metallically bonded fins, at the same time depositing excess moisture in the form of condensate which accumulates in the drip pan and is taken to the drains. The unique Carrier method of centrifugal refrigerant distribution to the coils insures even cooling.

DESCRIPTION—Optional equipment with this type of unit includes auxiliary spray of centrifugal nozzles assembly for city water or recirculated water to keep the coils wet, and also to provide a flushing action, important in many cases for cleansing and preventing odors. The wet coils give evaporative cooling effect to the air.

Various combinations of the sections can be built up with or without filters, preheaters, return air connection, flushing sprays, by-pass, etc. to suit particular conditions. This results in wide flexibility of application and installation.

Assembly is one to four or more unit sections stacked vertically and bolted rigidly together. Available in nine sizes, each of three widths to give required capacity. All elements furnished either right or left hand. Casing of best grade copper bearing steel, all sheaths and angles galvanized, aged and protected with two coats of corrosion resistant paint. Equipped with shallow or deep drip pan.

The application of direct expansion cooling for large areas becomes standardized. With chilled water, the closed system simplifies piping and pumping for multiple dehumidifiers at different elevations. The closed system eliminates corrosion and cleaning problems found in open systems due to air contamination.

PERFORMANCE SUMMARY

Air Capacities—In small increments from 4000 to 29,970 cfm.

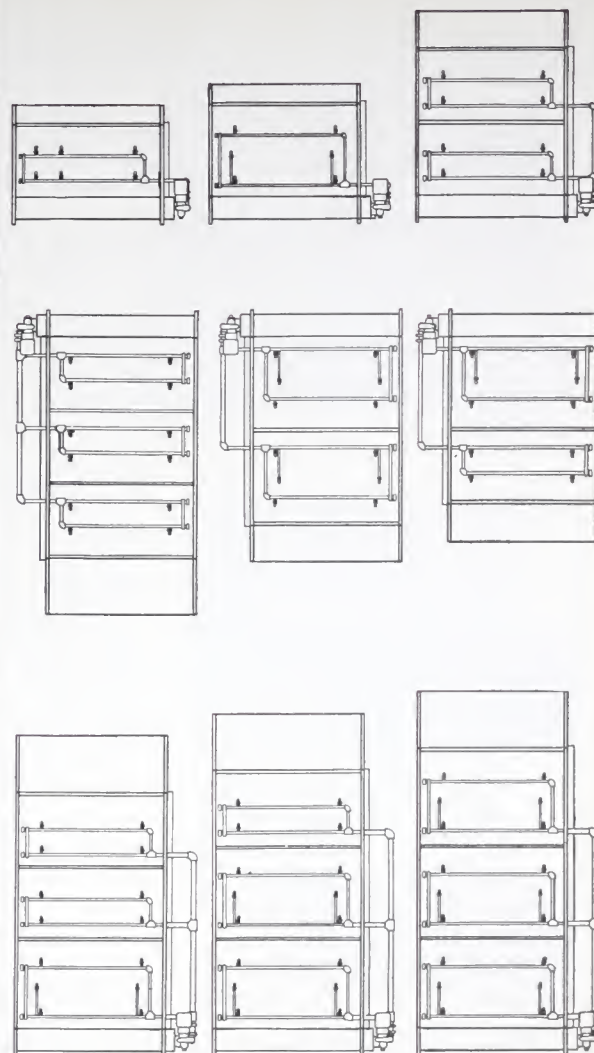
Cooling Effect—From 3 to 104 tons for direct expansion.

Saturation Efficiency—For dehumidification 80% contact (20% by-pass) for 4-row coils; and 90% contact (10% by-pass) for 6-row coils.

For humidification and evaporative cooling: 80% saturation efficiency with recirculating sprays. 50% saturation efficiency with direct city water sprays.

Spray Water Capacity—Recirculating Sprays—approximately 0.8 gpm per sq. ft. of coil face area at 12 ft. head. Direct city water sprays—approximately 0.11 gpm per sq. ft. of coil face area at 25 lb. pressure.

Rated Air Resistance—Resistance at maximum air quantity with recirculating sprays (See Table 8 for complete ratings). 4-row coil 0.62" water; 6-row coil 0.88" water.



UNIT ASSEMBLIES

Recirculated Water—Left-hand Units with By-pass Shown
Each Assembly Available in Three Widths



SMALL CENTRAL PLANT TYPE 43Q INDUSTRIAL WEATHERMAKER

This unit is primarily for the production of atmospheric conditions required in industrial applications . . . printing shops, textile mills, etc. In reality a small central station plant, this Weathermaker may be connected with ducts to distribute air to portions of the conditioned space remote from the refrigeration or heating source.

The unit is made up of a motor-driven fan section, a spray and coil section, eliminators, motor-driven pump and special air intake. Heater coils may or may not be used. Unit may be equipped with by-pass to mix conditioned air from room with that which has passed through the conditioning machine. These units are designed for cooling, heating, dehumidification, humidification, ventilation, filtration and circulation.

SPECIFICATIONS

Unit No.	Max. c.f.m.	No. Fans	Ranges, motor hp.	Overall dimensions, inches		
				Width	Length	Height
43Q2	2000	2	1/4-1	26	58 1/2	91 1/4
43Q6	4000	2	1/2-2	33	76 1/2	110 1/2
43Q7	6000	3	3/4-3	33	102 1/4	111 1/4
43Q9	8000	3	1-3	2	102 1/4	112 1/4

When the air conditioning equipment is located outside of the conditioned space, means must be provided to convey the air to, and properly distribute it in, the conditioned areas. This is accomplished by means of duct work and outlet grilles. Air distribution may be controlled automatically or manually as to direction, quantity and temperature, depending on the desired conditions.

It is essential that the duct system be designed to fit the correct conditions of air quantity and movement. Careful and scientific estimate of heat load, quantity, concentration and variation must precede selection of the distribution system. Friction losses in the ducts must be accurately predicted. The selection may be based to a large extent on how it will fit into the building structure economically. Particular conditions may require acoustic treatment of the duct work; vanes in elbows will determine duct size necessary for designed air velocity.

The selection of the air outlet depends on size of the room, ceiling height, desired length of blow, occupancy, quantity and variation in heat load, velocity and quantity of air, appearance and type of room decoration.

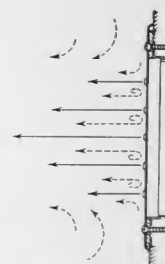
CARRIER GRILLE OUTLETS

Type 35C1 Slotted Outlets

This type of outlet is intended for use in either unitary or central station duct distribution systems and for either concealed or exposed duct work.

The primary air, introduced in multiple streams through slots in the outlet, induces a large secondary air flow, giving a recirculation effect in the room. Thus, a small quantity of high velocity (up to 2500 fpm) and high static pressure air (up to .04") at a temperature 20° to 25° below room temperature diffuses rapidly with a large quantity of room air. This permits smaller and less extensive duct systems.

In spaces where a wide variation in room load or use, such as in a series of hotel private dining rooms, is anticipated, manually operated snap dampers are often used for conditioned air supply. They are available for fully open or closed positions and for one, two, or three rows of slots.



Induction Effect Slotted Outlet

SPECIFICATIONS

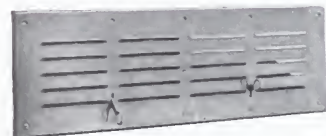
Type 35C1 slotted outlets are die-formed of galvaneal steel or Allegheny metal, unpainted. The former usually is finished on the job to harmonize with surroundings, the latter being brush finished. Outlets are available in three-slot widths: $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{1}{2}$ ". Countersunk punched holes

along edge provide for attaching to ducts.

Snap action dampers of steel, felt covered, are available in $\frac{1}{8}$ " and $\frac{1}{4}$ " slotted outlet sizes. If used as option, they must be specified so that handle opening may be provided in face.



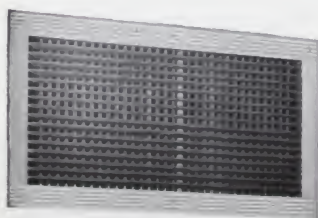
Type 35C1 Slotted Outlet



Front View of 35C1 Outlet with Snap Damper



Rear View 35C1 Outlet with Snap Damper



Type 35C5 Adjustable Outlet



Comparison of Size of 35C1 (left) and 35C5 Outlets for Same Capacity

TYPE 35C5 ADJUSTABLE OUTLETS

This type of conditioned air outlet fills a long felt need for outlets that could be adjusted at the installation to correct unforeseen distribution obstacles. They are usable on ducts from either unitary or central station conditioning equipment and are also provided on certain pieces of Carrier conditioning units, (see page 6).

In a formed steel frame of the outlet are located two sets of semi-streamline vanes which are an integral part of the Type 35C5 outlet. The rear set of these individually adjustable vanes is vertical and regulates the longitudinal distribution of the air. The front set of vanes are horizontal and is divided into groups, each group controlling the air delivery in the vertical plane. The rear vanes, individually adjustable, may be used to decrease the area of opening by throttling the air flow and raising the resistance of the outlet as a whole.

Type 35C5 outlets are particularly applicable to conditions where large air capacity, long blows and moderate temperature difference between air stream and room are required. They are available in either prime finish, or stainless steel.

A wide range of outlet velocities may be used up to approximately 2000 ft. per minute. The adjustable vanes in the outlet give a wider range of location for the outlet with respect to the ceiling than any other type. Since these outlets have less induction effect than Type 35C1 (slotted) outlets, they are frequently more applicable to long narrow rooms supplied with air from one end.

SPECIFICATIONS

Frame. Of auto-body steel with brass pivots with punched holes for attachment to duct work.

Vanes in Outlet. Chrome plated border, stainless steel louvers, semi-streamlined to reduce friction and decrease

noise. Rear vertical vanes, individually adjustable on friction-tight pivots. Front horizontal vanes divided into groups with "gang" controls which may be adjusted on friction tight pivots. Two keys for adjusting vanes furnished with each shipment.

CARRIER SPACE HEATING

TYPE 46E KROY UNIT HEATERS

USES—These units meet a wide range of conditions: small spaces with comparatively small heat losses; large spaces with heat losses concentrated around walls; for providing sufficient heat to prevent sprinkler freezing; elimination of process moisture to prevent drippage; large rooms subdivided into smaller spaces.

DESCRIPTION—This unit, in decorative black lacquer, aluminum trimmed, is designed for suspension mounting and is available in fifteen sizes ranging in capacity from 21,000 to 255,500 B.t.u. per hour.

Capacity varies with temperature of air entering heating coil. This must be known before calculating heat requirements and size of unit. Steam pressure at unit rather than at boiler or other source, is used for equipment selection. Control thermostats are available.

Two general locations for units are (a) along exposed walls, discharging parallel to wall; toward room center to meet roof losses; and (b) in center of room blowing toward exposed walls. It is advisable to place units near shipping doors or other points of large air infiltration. With no air flow obstructions, Kroy units will deliver up to 50 to 60 feet from the unit, depending on fan speed. (Additional data in Bulletin 46E.)

SPECIFICATIONS

Coils

Aerofin tubing with helically wound fins, tested 1,000 lbs. hydrostatic pressure, guaranteed any pressure (steam or hot water) up to 200 lbs. gauge.

Fan

Propelled type — 12", 16", 22" diameter

Motor

Size, 1/50 hp. to 1/3 hp.

CAPACITIES AND DIMENSIONS

Unit No.	R.p.m.	c.f.m.	B.t.u.	Dimensions, Inches			Unit No.	R.p.m.	c.f.m.	B.t.u.	Dimensions, Inches		
				Length	Height	Depth					Length	Height	Depth
46E11	1725	970	32,000	15 3/4	13 1/2	14 7/8	46E42	1750	1685	130,000	24 1/4	17 3/4	16 3/8
46E12	1725	706	42,600	15 3/4	13 1/2	14 7/8	46E51	1160	2900	148,000	28 3/4	28 3/4	18 7/8
46E13	1725	912	47,800	15 3/4	13 1/2	14 7/8	46E52	1160	3400	167,200	28 3/4	28 3/4	18 7/8
46E21	1750	1554	65,000	24 1/8	17 3/4	16 3/8	46E61	1160	2830	190,000	28 3/4	28 3/4	18 7/8
46E22	1750	1900	81,000	24 1/8	17 3/4	16 3/8	46E62	1160	3330	210,000	28 3/4	28 3/4	18 7/8
46E31	1750	1541	96,000	24 1/8	17 3/4	16 3/8	46E71	1160	2800	235,000	28 3/4	28 3/4	18 7/8
46E32	1750	1795	110,000	24 1/8	17 3/4	16 3/8	46E72	1160	3180	255,500	28 3/4	28 3/4	18 7/8
46E41	1750	1510	120,000	24 1/8	17 3/4	16 3/8							

Bulletin 46E1 gives complete ratings, including those for lower speeds.

TYPES 46P, 46Q, 46R HEAT DIFFUSING UNITS

DESCRIPTION—Thermostatically controlled thermadjust feature results in heat output balanced against requirements, economical fuel consumption results from minimizing the over-heating of upper spaces, more constant demand on steam boiler.

Units are available with a large variety of directional outlets providing even and zoned distribution. Units are well adapted for outside air connection, as required.

OPERATION—Floor mounted, these units take return air from floor level through heater coils, or through front of unit by-passing heater coils. The fan forces the heated air out through distribution outlets horizontally for maximum distribution over the working zone. Type 46Q are floor mounted; the 46P also vertical but suspended; the 46R horizontal suspended.

CAPACITIES—BELT DRIVE UNITS

UNIT SIZE	Fan Speed R.P.M.	C.F.M. At Final Temp.	Basic B.T.U. @ 21bs. Steam 60° Ent. Air	UNIT SIZE	Fan Speed R.P.M.	C.F.M. At Final Temp.	Basic B.T.U. @ 21bs. Steam 60° Ent. Air
46Q-20	1100	3400	130000	46Q-64	885	7400	435000
46P-20	940	2950	120000	46P-64	740	6200	380000
46R-20	820	2600	110000	46R-64	670	5600	350000
46Q-22	1100	3000	175000	46Q-66	885	7400	470000
46P-22	940	2550	148000	46P-66	740	6150	410000
46R-22	820	2250	135000	46R-66	670	5600	385000
46Q-24	1100	3200	190000	46Q-70	845	10880	490000
46P-24	940	2750	167000	46P-70	740	9500	368000
46R-24	820	2400	150000	46R-70	600	7650	350000
46Q-26	1100	3300	215000	46Q-72	845	10050	600000
46P-26	940	2830	192000	46P-72	740	8900	540000
46R-26	820	2500	173000	46R-72	600	7120	450000
46Q-30	1100	5100	197000	46Q-74	845	10320	650000
46P-30	940	4350	180000	46P-74	740	9030	587000
46R-30	820	3800	165000	46R-74	600	7330	485000
46Q-32	1100	4600	250000	46Q-76	845	10600	688000
46P-32	940	3920	220000	46P-76	740	9200	620000
46R-32	820	3440	200000	46R-76	600	7400	520000
46Q-34	1100	4800	285000	46Q-90	980	13650	510000
46P-34	940	4100	254000	46P-90	845	11800	470000
46R-34	820	3600	227000	46R-90	740	10360	430000
46Q-36	1100	4950	320000	46Q-92	980	12800	760000
46P-36	940	4200	283000	46P-92	845	11200	685000
46R-36	820	3700	254000	46R-92	740	9680	622000
46Q-60	885	7550	275000	46Q-94	980	13350	840000
46P-60	740	6250	245000	46P-94	845	11520	750000
46R-60	670	5550	235000	46R-94	740	10100	680000
46Q-62	885	7100	390000	46Q-96	980	13700	900000
46P-62	740	5950	340000	46P-96	845	11830	800000
46R-62	670	5400	316000	46R-96	740	10400	725000

Available in belt or direct drive types with or without by-pass features.

DIMENSIONS, INCHES

Unit No.	Length	Height	Depth
46Q20-22-24-26	46 1/2	109	21
46Q30-32-34-36	66 1/2	109	21
46Q60-62-64-66	59 1/2	109 1/2	28
46Q70-72-74-76	83 1/2	109 1/2	28
46Q90-92-94-96	83 1/2	116	36 1/2

SPECIFICATIONS

Fans

Multi-blade centrifugal, 11 3/4" and 16" diameter, two or three fans per unit.

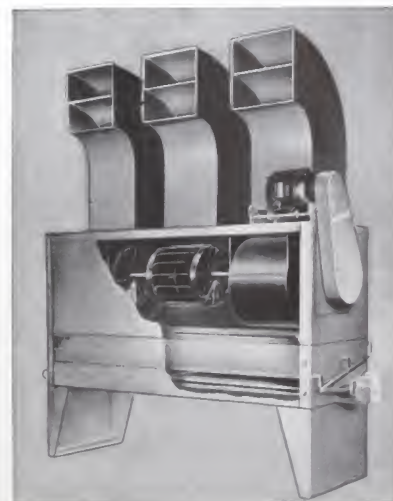
Motor

1/4 to 5 hp., 110, 220, 440, 550 V.A.C., or D.C. 690 to 1750 r.p.m.

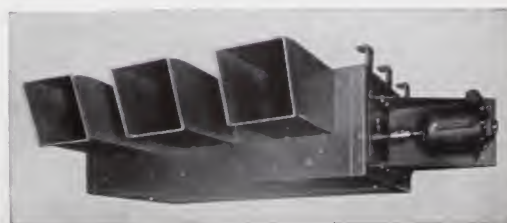
Coils

Aerofin tubing with helically wound fins, tested 1,000 lbs. hydrostatic pressure, guaranteed any pressure (steam or hot water) up to 200 lbs. gauge.

Complete data on units in Bulletin "Carrier Heat Diffusing Units".



Type 46Q—Belt Drive



Type 46R—Direct Drive

Unitary equipment for product conditioning, cooling and storage, at temperatures below comfort range, and at refrigerant temperatures, both above and below freezing. This equipment provides positive air circulation; adequate and varied means of air distribution, surface cooling (or with spray); automatic control of room conditions; high relative humidities if desired; automatic control of defrosting when room is above 33°; adaptation to variety of refrigerants; flexibility to meet variety of storage room layouts.

TYPE 1400 COLD DIFFUSERS



USES—Primarily for small commercial applications where temperature is maintained above freezing.

CAPACITIES—Seven sizes of units ranging from 0.1 to 0.75 tons are available for Methyl Chloride, Freon, or cold water as refrigerants.

DESCRIPTION—Cooling coil of copper tubing with aluminum fins, enclosed in galvanneal casing, green lacquered. Propeller fan draws room air over coil and dis-

charges horizontally into conditioned space. Light weight. Easily installed. Electrical, refrigeration and drain are only connections required.

TYPE 1800 COLD DIFFUSERS

CAPACITIES—Range in capacity from .2 to 1.5 tons, a range in Ammonia or Brine, not available with Type 1400 units.

DESCRIPTION—The type 1800 Carrier Cold Diffusers are horizontal suspended models which supplement the Type 1400 units, being available for ammonia or brine. Adjustable deflectors, control velocity and direction. Prime surface steel galvanized coils, near ceiling outlet removes warm air, not through product.



TYPE 15K COLD DIFFUSERS

USES—They are frequently used in fur storage vaults, food or fruit storage, florist shops or other similar cooling requirements.

DESCRIPTION—Similar to the Type 1400, these units discharge air downward with pan outlets. Coils are available for Methyl Chloride, Freon, Brine, or Ammonia refrigerant as required.

The coils have from three to seven circuits in parallel depending on refrigerant and requirements.



TYPE 15Q COLD DIFFUSERS

DESCRIPTION—Floor-mounted surface type cooling units having prime and fin surface coils.

OPERATION—Air is drawn in through the base and forced out vertically by multiblade centrifugal fans through top outlet or ducts. Four sizes available with coils for Freon, Methyl Chloride, Ammonia, or Brine. Capacities range from one to thirty tons of refrigeration per unit.

Made in sections, the units are easily handled, and all but the 15Q9 model may be easily converted from top to side discharge. Multiple outlets provide directional air diffusion. Humidity control obtained by correct selection of air quantity refrigerant temperature.



TYPE 15T COLD DIFFUSERS

USES—Recommended for storage rooms to be held near or below freezing (but above 10° F.) and where latent heat loads, such as with fresh meats, are heavy. Germicidal action inhibits mold growth and disagreeable odors.

DESCRIPTION—This unit offers a means of obtaining high air purity and low operating temperatures without loss of time for defrosting. The salt brine spray has germicidal action and prevents frosting.

These units have wide application in spaces and for temporary storage of products where minute particles of brine are unobjectionable. In certain spaces such as brewery fermenting rooms, the 15T units may be used with sweet water spray instead of brine, thus serving as a combined air washer into conditioned space. Light weight.

In the five sizes, floor mounted of Type 15T, the refrigerant may be Freon, Methyl Chloride, Ammonia or Brine. The unit is formed and welded in sections, affording flexibility of installation. The outlets may be readily converted from top discharge to side discharge. They are low velocity type, the multiple outlets affording uniform air distribution. The coils are finned type with centrifugal headers for Freon or Methyl Chloride, surge drum and float valve controls for Ammonia.



DATA ON COLD DIFFUSERS

Type Unit	No. of Sizes Available	Suspension	Type of Fan	No. of Fans	Range of Cfm	Fan Motor Hp	Range of Capacity Tons	Types of Refrigerant	Type Coil	Coil Material	DIMENSIONS OVERALL, INCHES			Weight
											Length	Depth	Height	
1400	7	Ceiling	Disc	1	200-1100	1/50-1/15	0.1-0.75	Meth. Cl. Freon	Finned	Fin-Aluminum Tube-Copper	15 1/2" - 22 1/4"	21" - 23"	12" - 22 1/2"	103-175
1800	3	Ceiling	Disc	1, 2, & 3	500-3800	1/15 Three 1/6	0.2-1.5	Brine Ammonia	Prime	Galv. Steel	24 1/2" - 42 1/2"	29 1/2"	21 1/2"	419-1056
15K	2	Ceiling	Disc	1	700-3000	1/15-1/3	0.5-3.5	Meth. Cl. Freon	Finned	Fin-Aluminum Tube-Copper	24 1/2" - 34 1/2"	24 1/2" - 38 1/2"	30 1/2" - 35 1/2"	360-485
								Ammonia	Finned	Fin-Aluminum Tube-Aluminum				
								Brine	Finned	Fin-Aluminum Tube-Copper				
15Q Prime	4	Floor Mounted	Centrifugal	1, 2, & 3	1000-12000	1/4 - 5	1 - 20	Meth. Cl. Freon	Prime	Galv. Steel	27 1/2" - 45 1/2"	21" - 38"	18 1/2" - 112 1/2"	1438-3800
								Ammonia	Prime	Galv. Steel				
								Brine	Prime	Galv. Steel				
15Q Finned	4	Floor Mounted	Centrifugal	1, 2, & 3	1200-12000	1/4 - 3	1 - 30	Meth. Cl. Freon	Finned	Fin-Aluminum Tube-Copper	27 1/2" - 45 1/2"	21" - 38"	18 1/2" - 112 1/2"	1656-2115
								Ammonia	Finned	Galv. Steel				
								Brine	Finned	Galv. Steel				
15T Brine Spray	5	Floor Mounted	Centrifugal	1, 2, & 3	750-13000	1/4 - 5	1 - 35	Meth. Cl. Freon	Finned	Galv. Steel	38" - 56"	21" - 34 1/2"	70" - 84"	1258-4708
								Ammonia	Finned	Galv. Steel				
								Brine	Finned	Galv. Steel				

REFRIGERATING MACHINES

TYPES 7H1 TO 7F2 (AIR COOLED)

DATA ON FREON MACHINES

	7H1-14	7H1-13	7H1-12	7F2-34	7F2-10	7F2-15
Motor, hp.	1/4	1/3	1/2	3/4	1	1 1/2
Std. speed r.p.m.	470	610	800	285	320	470
Nominal Cap.*						
1000 Btu/Hr.	2.18	2.83	3.79	4.60	5.48	8.51
Tons	.182	.236	.308	.384	.456	.71
Connections, Ins.						
O. D. Suction	3/8	1/2	1/2	5/8	5/8	3/4
Discharge	3/8	1/2	1/2	5/8	5/8	3/4
Dimensions, Ins.						
Length	23 1/2	29	29	34	34	34
Width	15 1/2	22 7/8	22 3/4	22 1/8	22 1/8	22 1/8
Height	15 3/8	20 1/4	23 1/8	25 1/8	25 1/8	29 1/2
Net Weight, lb.	153	240	265	335	355	375

*90° Ambient Air Temperature, 20° Suction

These units are available in six sizes using either Freon or Methyl Chloride as the refrigerant. Primarily used for food refrigeration installations, either singly or in multiple. Particularly adaptable when water for condensing is not economically available.

TYPES 7H1 TO 7F4 (WATER OR EVAPORATIVE CONDENSERS)

DATA ON FREON MACHINES

Unit No.	7H1-13	7H1-12	7F2-34	7F2-10	7F3-15	7F3-20	7F4-30
Motor Hp.	1/3	1/2	3/4	1	1 1/2	2	3
Std. Speed rpm.	510	740	285	355	285	390	350
Nom. Cap.*							
1000 Btu/Hr.	4.96	7.22	9.47	11.80	17.98	24.60	33.10
Tons	.412	.601	.79	.974	1.49	2.05	2.7
Connections, Ins.							
Suction—W.C.	1/2"	1/2"	5/8"	3/4"	7/8"	7/8"	2 3/4"
Suction—E.C.	1/2"	1/2"	5/8"	3/4"	7/8"	7/8"	2 3/4"
Liquid—W.C.	1/4"	1/2"	5/8"	3/4"	7/8"	7/8"	2 3/4"
Discharge—E.C.	1/2"	1/2"	5/8"	3/4"	7/8"	7/8"	2 3/4"
Water—W.C.	3/8"	3/8"	1/2"	1/2 FPT	1/2 FPT	1/2 FPT	3/4 FPT
Dimensions, Ins.							
Length—W.C.	34 3/4"	34 3/4"	36"	36"	43 1/4"	43 1/4"	43 3/4"
Length—E.C.	29"	34"	34"	34"	40 1/2"	40 1/2"	40 1/2"
Width—W.C.	17 1/4"	17 1/4"	17 5/8"	17 5/8"	22 1/4"	22 1/4"	23 1/8"
Width—E.C.	15 1/2"	17 5/8"	17 5/8"	17 5/8"	22 1/4"	22 1/4"	23 1/8"
Height—W.C.	18 1/4"	18 1/2"	22 1/2"	22 1/2"	31 1/2"	31 1/2"	32"
Height—E.C.	18 1/4"	18 1/2"	22 1/2"	22 1/2"	31 1/4"	31 1/4"	32"
Net Weight—W.C.	240	260	310	330	465	475	585
Net Weight—E.C.		190	240	255	390	455	580

x—Available only in water cooled type.

*—Suction 40° F., condensing 98° F.

Seven sizes of this unit are available for use with the water cooled condenser, six for evaporative condenser (see page 14). Refrigerants used are Freon or Methyl Chloride. Made with two or three cylinders, the smaller sizes are commonly used in commercial refrigeration installations, the larger sizes may be used for air conditioning.

TYPES 7F5, 7H5, 7F6, 7H6, 7F66, 7H66 (WATER OR EVAPORATIVE CONDENSERS)

DATA ON FREON MACHINES

	7F5-50	7H5-75	7F6-100	7H6-150	7F66-100-100	7H66-150-150
Motor Hp.	5	7 1/2	10	15	Two-10	Two-15
Std. Speed R.P.M.	450	600	450	600	450	600
Nom. Capacity*						
1000 Btu/Hr.	68.0	90.6	136.0	181	272	362
Tons	5.66	7.56	11.64	15.05	22.64	30.18
Connections, Ins.						
Suction, W.C.	1 3/8"	1 3/8"	2 1/8"	2 5/8"	3 1/2"	3 1/2"
Liquid, E.C.	1 3/8"	1 3/8"	2 1/8"	2 5/8"	3 1/8"	3 1/8"
Water in W.C.	1 1/2 F.P.T.	1 1/2 F.P.T.	1 1/2 F.P.T.	1 1/2 F.P.T.	2 F.P.T.	2 F.P.T.
Water out W.C.	1 M.P.T.	1 1/2 M.P.T.	1 1/2 F.P.T.	1 1/2 F.P.T.	2 F.P.T.	2 F.P.T.
Dimensions, Ins.						
Length W.C.	60 1/2	59 3/4	61 1/4	63 3/4	105	105
Length E.C.	50	50	50	50	95 3/4	95 3/4
Width W.C.	30 1/8	30	37 3/8	37 3/8	38 1/2	38 1/2
Width E.C.	26 1/4	26 1/4	35 1/2	35 1/2	33 1/2	32 7/8
Height W.C.	41 3/4	44 1/8	41 3/4	44 1/8	46 1/8	55
Height E.C.	30 3/4	33 1/2	30 3/4	33 1/2	32 3/4	41
Net Weight W.C.	1175	1265	1840	1895	2650	3500
Net Weight E.C.	1030	1120	1435	1535		3100

*Suction 40° F., Condensing 98° F.

These units, water or evaporative condenser cooled, and using either Methyl Chloride or Freon as refrigerant, represent machines usable for medium small refrigeration loads, including air conditioning service. The Type 7F66 series duplex machine consists of two compressors and motors on a single base, each of which may be operated independently.

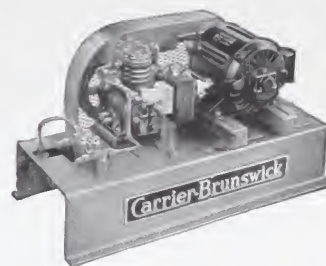
TYPES 7G6 AND 7G8—(WATER OR EVAPORATIVE CONDENSERS)

DATA ON FREON MACHINES

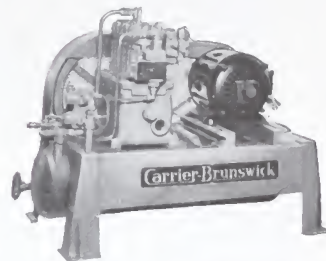
Unit No.	7G6-200		7G8-300		7G8-100	
	W.C.	E.C.	W.C.	E.C.	W.C.	E.C.
Motor Hp.	20	20	30	30	40	40
Standard Speed RPM	800	800	450	450	500	500
Nom. Capacity*						
1000 Btu/Hr.	229	229	489	489	543	543
Tons	19	19	40.7	40.7	45	45
Connections, Ins.						
Suction, W.C.	2 5/8"	2 5/8"	3 5/8"	3 5/8"	3 5/8"	3 5/8"
Liquid, W.C.	1 1/8"		1 5/8"		2 1/8"	2 1/8"
Liquid, Discharge, E.C.		2 1/2"	1 5/8"	2 5/8"		2 5/8"
Water In, W.C.	1 1/2 F.P.T.		2 1/2 F.P.T.		2 1/2 F.P.T.	
Water Out, W.C.	1 1/2 F.P.T.		2 1/2 F.P.T.		2 1/2 F.P.T.	
Dimensions, Ins.						
Length, W.C.	63 3/4	50	102 1/8	80 1/2	102 1/8	80 1/4
Width, W.C.	37 3/8	35 1/2	58 1/2	58 1/2	58 1/2	58 1/2
Height, W.C.	44 1/2	33 1/2	72 5/8	58 3/4	72 5/8	58 5/8
Net Weight, W.C.	1895	1535	5000	3600	5300	3900

*Suction 40° F., Condensing 98° F.

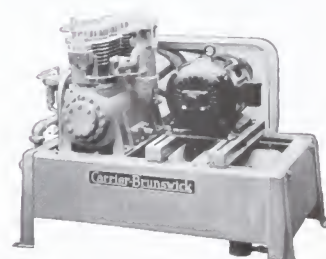
These units are used for medium sized commercial or industrial refrigeration or for air conditioning installations. Freon or Methyl Chloride refrigerant may be used. More than one unit may be interconnected on a common suction for use on the same refrigeration load.



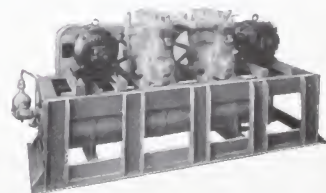
Type 7H1



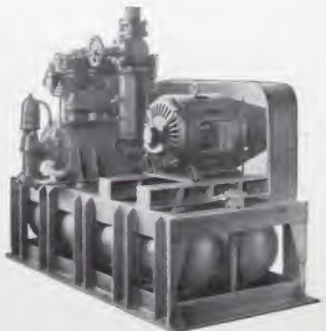
Type 7F3



Type 7F5



Type 7F66



Type 7G8

TYPE 8B REFRIGERATING MACHINES

(Ammonia)

These units are designed for small and medium size commercial refrigeration application of all types where Ammonia is the preferred and accepted refrigerant. These units are available either as a self-contained unit with a belt drive from a motor mounted on the same base, or as a bare compressor which is driven by belt, or for direct connection for low speed motors or through gear reduction for high speed motors. These eccentric drive compressors have C.I. oil-bathed bearings of low unit pressure.

DATA ON TYPE 8B SELF CONTAINED UNIT

Unit No.	Cond. Size Inches	ASRE tons	Comp. R.P.M.	Motor HP.	Ship. Wt. Lbs.
8B11	8x63	1.06	500	2	1285
8B12	10x63	2.14	500	5	2100
8B13	12x63	4.57	475	7½	2720
8B14	15x63	7.00	390	15	3780

CARRIER EVAPORATIVE CONDENSERS

For several years, Carrier Evaporative Condensers have been widely accepted as a means of water and power economy in refrigeration machines. They are essentially air cooled condensers, in which the refrigerant gas is condensed thru the evaporative cooling effect of water sprayed over the coil. They replace water cooled condensers and water cooling tower systems. They are available for air conditioning and refrigeration plants of one to forty tons capacity. In existing installations this is an effective means of reducing operating costs through practical elimination of water costs. For new work, an economical installation of refrigeration equipment results.

Utilizing as little as 5% of the amount of water required for water cooled condensers, these units are particularly applicable in locations where water supply is limited in quantity or pressure, or is expensive.

Operating advantages are: (compared with water-cooled units) 90 to 95% less water; saving in power; increased compressor capacity (ability in some cases to use next smaller size compressor); makes possible larger installations in water-scarce localities; practical elimination of pumping cost (compared with cooling tower), lower operating costs thru effective use of outside wet bulb temperatures.

THE TYPE 9Q EVAPORATIVE CONDENSER, floor mounted is available in four nominal capacity sizes: 10, 20, 30, 40 tons. The units may be connected in multiple for greater capacities for operation with systems using Methyl Chloride, Freon or Ammonia as refrigerants.

The units are of sectionalized construction, which facilitates handling and erection. It provides an assembly which can be easily changed to meet various installation requirements. The units are designed to be installed out-of-doors without additional housing. When installed indoors, a duct connection leads to the outside for discharge of heat and moisture-laden air.

SPECIFICATIONS

Unit No.	Approx. refriger. cap. tons	Dimensions, Inches			Oper. wt. lbs.	Fan Motor hp.	Pump motor, hp. 60 Cyc.	Water comp. R.P.M.	Refrig. Connect., Ins.	
		Length	Width	Height					Gas	Liquid
9Q2	10	58¾	28	63½	2000	1	1/6	0.6	2¼	1¼
9Q6	20	73¾	28	77½	3000	1½	1/6	1.1	2¼	1¼
9Q7	30	99¾	28	77½	3650	2	1/6	1.7	2¼	1¼
9Q9	40	101¾	36½	77½	4350	3	1/6	2.1	3¼	1¼

THE TYPE 9P EVAPORATIVE CONDENSERS are economical for the smaller sizes of Methyl Chloride, Freon, or Ammonia compressors as the 9Q type is for the larger range. They serve primarily as a substitute for the water-cooled or air-cooled types of condensers. Advantages are: little water required in condensing, low power, high capacities.

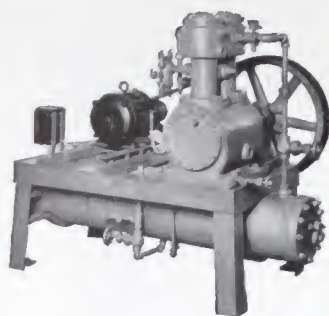
Units are available with one, or three circuit coils, depending on use with single or multiple compressors.

Installation—Suspension mounted. No floor space required. Takes up little head room. Simple to install, requiring only water supply and drain. Furnished with refrigerant gas inlet, liquid outlet, electrical connection to fan motor, air intake duct and discharge, water supply and drain connections. Duct connection may be made to the outside.

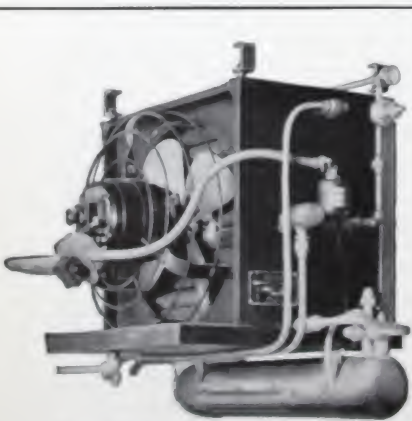
SPECIFICATIONS

Unit No.	Capacity Tons	Refrigerant*	Motor hp.	Length	Height	Width	Shipping wt., lbs.
9P2-104	1	M-F	¾	24 ¼	22 ½	22	270
9P2-214	1	M-F	¾	24 ¼	22 ½	22	270
9P2-224	1	A	¾	24 ¼	22 ½	22	270
9P3-104	2	M-F	1	27 ½	25 ½	27 ¼	360
9P3-214	2	M-F	1	27 ½	25 ½	27 ¼	360
9P3-224	2	A	1	27 ½	25 ½	27 ¼	360
9P3-304	2	A	1	27 ½	25 ½	27 ¼	360

*Refrigerant: M—Methyl Chloride. S—Sulphur dioxide. A—Ammonia.



Type 9Q Evaporative Condenser



Type 9P Evaporative Condenser

CARRIER CENTRIFUGAL REFRIGERATING MACHINES

USES—The Carrier Centrifugal Refrigeration Machines have had very widespread use for many years in providing large refrigerating capacities for industrial process work as well as for commercial air conditioning installations.

DESCRIPTION—The machines are available in various sizes, ranging in capacity from 50 to 850 tons, air conditioning rating. The refrigerant is Carrene (monofluorotrichloromethane), non-toxic, non-explosive, non-inflammable, highly efficient. In all sizes, the machines are compact self contained units, comprising evaporator, centrifugal multi-stage compressor, and condenser on a single foundation. They are used to furnish chilled brine (salt or other solution or fresh water) to the process equipment or the air conditioning apparatus, for direct cooling of beverages or condensation of gases. Machines are built in various stages or stage combinations as required for special applications. For process work, temperatures as low as 100° F. are attained with these machines but for air conditioning work the spray water is not usually taken below 40° F. above zero.

The machines may be located nearby or remotely from the point of heat absorption, consequently one machine or group of machines may serve the entire requirements for a widespread building or industrial load.

The eleven sizes with varying load conditions being properly cared for by each size makes the machine particularly desirable under a wide range of refrigeration requirements.

The compressors are multi-stage centrifugal. The rotor is statically and dynamically balanced and the impellers are lead coated to preserve this balance. The complete oiling system with pump is an integral part of the compressor with the oil cooler located externally.

Carrier Centrifugal Refrigeration Machine advantages are—

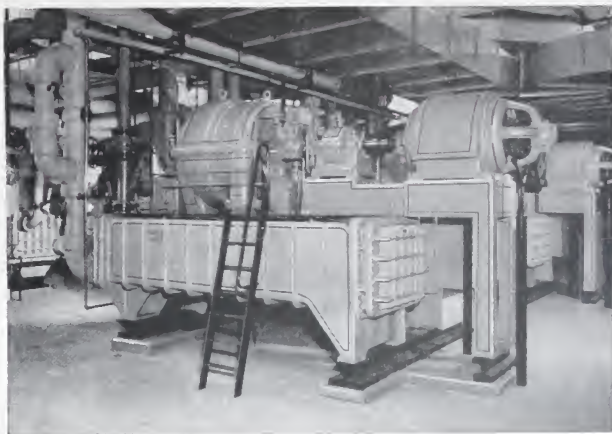
It permits wide selectivity in type of drive as: Synchronous motor for constant speed and power factor correction; Induction motor for constant speed and low initial cost but not permitting greatest economy of operation; Slip-ring motor for variable speed, manual or automatic control; very efficient at partial loads in combination with centrifugal; Diesel or gas engine for variable or constant speed, practical particularly where electric rates are high and low cost gas is available; Steam turbine for variable speed, manually or automatically controlled; its ideal designed speed is well suited to the speed of the Carrier machine, combining low cost with the maximum of economy and flexibility . . . clean steam, free from contaminating oil. It effects unusual heat balance, obtaining power for refrigeration as a by-product.

OPERATION—The Carrier Centrifugal Machine is easy to operate; it can be started simply; it picks up load almost instantly; it responds immediately to changes in load; it is a self-contained compact machine, with all gauges and thermometers within easy reach; it is inherently suited to automatic regulation, complete or partial; it has non-overloading characteristics.

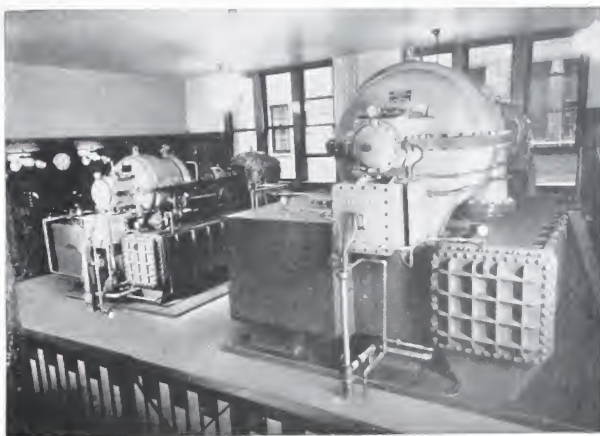
The Carrier Centrifugal Machine is easy to maintain; There are few moving parts and they are rotating, free from vibration and shock, light in weight, simple in construction; all bearings and parts are easily accessible; no pump-down preceding maintenance work is required except rarely; brass tubes less subject to corrosion pitting and fouling than steel tubes; oil does not come in contact with the refrigerant consequently the cleaning of heat transfer surfaces is simplified.

The machine and its refrigerant are safe. All moving parts are enclosed. Rotor speeds are conservative and below critical. For usual temperature conditions both condenser and cooler operate either under a vacuum or slightly above atmospheric pressure.

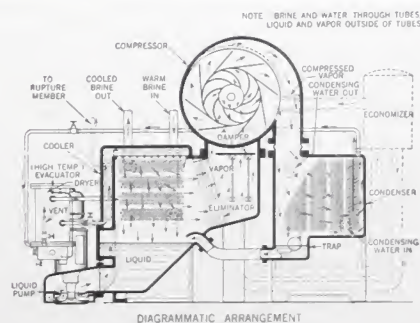
The Carrier Centrifugal Machine is inherently resistant to wear, and its consequences are small, not reducing its efficiency; It has inherent characteristic of adjusting itself to fractional load with out attention, it is a constant temperature machine, as distinguished from the reciprocating which is a constant volume machine. The refrigerant has the highest efficiency of any practically available. The machine occupies an exceptionally small amount of floor space per ton of refrigeration, compact in all sizes.



Battery of Centrifugals for Office Building



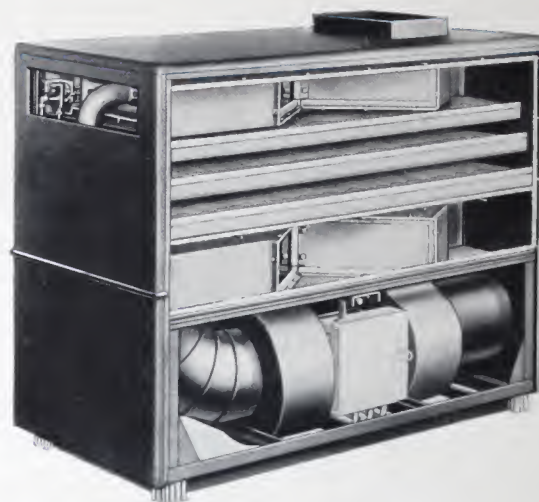
Centrifugal Refrigeration for Processing



DIAGRAMMATIC ARRANGEMENT

OPERATING CYCLE
 "The liquid pump (bottom left) raises the liquid refrigerant to the top of the evaporator. Through the holes in the distributing plate, the refrigerant is sprayed over the cooling coils through which circulates the brine (salt solution or water) to be cooled. The refrigerant absorbs the heat of the brine, thus evaporating. In this vapor state, it is drawn into the compressor where it is compressed (in stages) to the original pressure. Its heat is then removed by the condenser water (city, deep well, or tower water) flowing through the coils. Consequently, the refrigerant vapor becomes a liquid and enters first the return trap, then the evaporator, thus completing the refrigeration cycle."

TYPE 53B SILICA GEL DEHYDRATORS



USES—These units achieve direct control of humidity, independently of temperature. They meet a wide range of applications for maintaining low humidities in process work; controlling humidities in industrial plants; providing proper humidities in comfort air conditioning.

DESCRIPTION—Dehumidification of air is accomplished by the dehydrating quality of a solid adsorbent, Silica Gel. This substance will adsorb up to forty percent of its weight in moisture. The moisture is then readily expelled by the application of heat, so that the Silica Gel is again capable of adsorbing a like quantity of moisture. Silica Gel can be used indefinitely without deterioration or loss in volume. The efficiency of moisture removal increases as the inlet air becomes drier. There is virtually no limit to the dryness of air which may be secured; and thus by selecting the proper size of unit, moisture levels from practically anhydrous air to any higher level may be secured.

OPERATION—The equipment used to dehydrate air by this principle is fully automatic. It consists of two series of Silica Gel trays or beds, together with motor-driven fans to propel the air to be dehydrated. The damper mechanism automatically changes the air

stream from one set of beds to the other. A heater is used to expel the moisture, or "re-activate" the Silica Gel. A continuous air flow cycle is thus produced by this self-contained equipment. The standard heaters for activation are designed for use with gas. However, dehydrators for steam activation are available with steam at pressures of 100 lb. gauge or higher.

SPECIFICATIONS

Unit Number	Air Capacity Cfm	Gas Consumption Btu/hour	Motor H.P.	DIMENSIONS—INCHES		
				Length	Width	Height
53B6	600	70,000	$\frac{1}{2}$	55 $\frac{1}{2}$	27	45
53B14	1300	147,000	1 $\frac{1}{2}$	65	35	58
53B27	2700	262,000	3	93 $\frac{1}{2}$	50 $\frac{1}{2}$	79 $\frac{1}{2}$
53B50	5000	525,000	5	120	66 $\frac{1}{2}$	118

Moisture Removal: The moisture removal capacity ranges from 26 lb. per hour for the 600 cfm unit to 218 lb. per hour for the 5000 cfm unit, based on an entering air condition of 9 grains per cubic foot. The units may be used in multiple to obtain a wide range of dehydrating capacities.